

LABORATORY

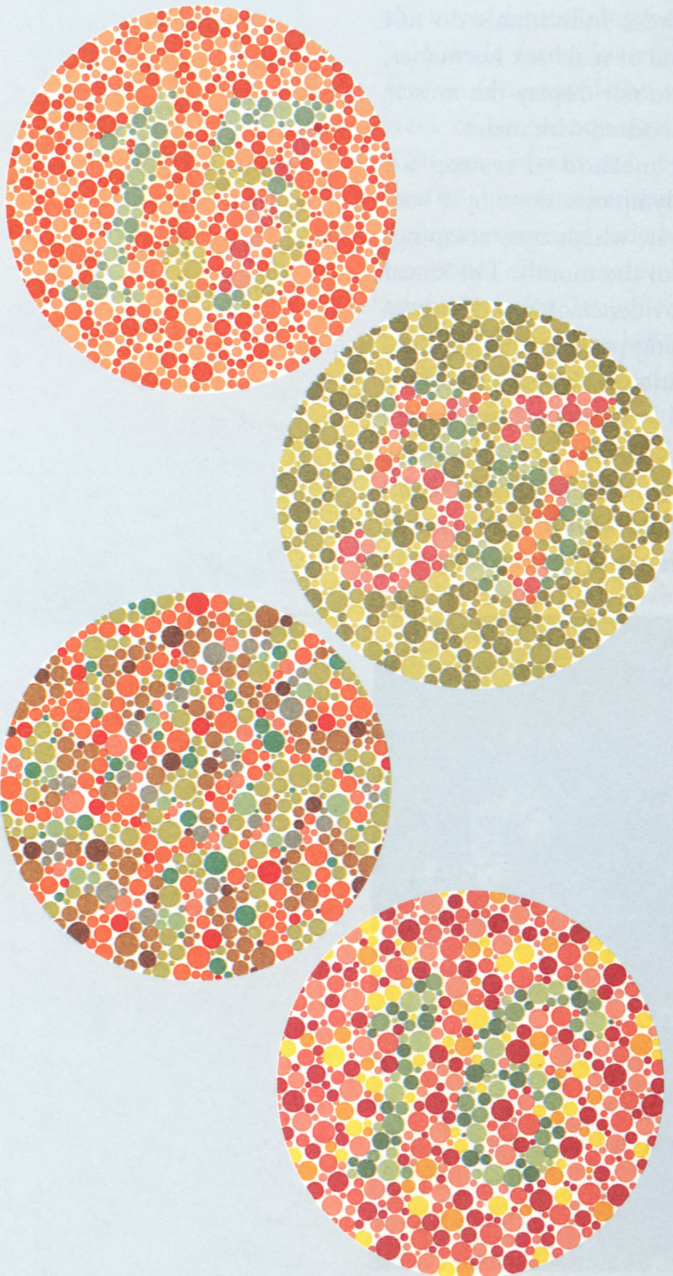
HUMAN SEX-LINKED GENES

Objective

To investigate the inheritance of color blindness.

Materials

color-blindness chart



Procedure

- 1 Look at the color-blindness chart. The chart is composed of a number of colored circles. Some of the circles in each of the charts combine to form numbers.
- 2 Copy the table in your data book and complete.

a)

Plate	Number identified	Actual number
1		
2		
3		
4		

- 3 Combine class results, and copy and complete the second data table. (This laboratory works best if two or three class results can be combined.)

b)

Gender	Total number of individuals	Number identified	Number not identified
Females			
Males			

Laboratory Application Questions

- 1 How would your laboratory results differ if color blindness were not sex-linked?
- 2 Explain why a woman who is not color-blind, but whose father was color-blind, can give birth to a son who is color-blind.
- 3 Diabetes is caused by a recessive gene located on an autosomal chromosome. You already know that color blindness is caused by a recessive sex-linked trait. Explain why the ratio of women to men who have diabetes is much closer than the ratio of women to men who have color blindness.
- 4 Hemophilia A, another sex-linked disorder, is very rare in females, yet color blindness is fairly common. Explain why the color-blindness gene is more common. ■